

**Question 4 [2 + 2 + 2 + 2 = 8]**

Consider the university database in Question (3) to answer the following SQL questions.

1. Delete all shipments records supplied by supplier S1 with undefined QTY.

```
DELETE from shipments  
WHERE SNUM = 'S1' AND QTY IS NULL ; 2
```

2. Find the names of suppliers located in UK ordered alphabetically by supplier name.

```
SELECT SNAME  
From supplier  
WHERE LOCATION Like '%UK%'  
ordered by SNAME asc ; 2
```

3. Retrieve the Supplier number that has more than two shipments.

```
SELECT SNUM  
From Shipments  
WHERE count (SNUM group by SNUM) > 2 ; 1
```

4. Modify the data type of LOCATION in Supplier to be: Characters (max size 30).

```
ALTER Table Supplier  
Modify LOCATION Var CHAR(30) ; 1.5
```

**UNIVERSITY OF BAHRAIN**  
**COLLEGE OF INFORMATION TECHNOLOGY**  
**DEPARTMENT OF COMPUTER SCIENCE**

**ITCS385 – Database Systems**

**Midterm**  
**Semester II, 2013-2014**

Date: Wed, April 23<sup>rd</sup>, 2014

Time: 11:00am - 12:30pm

<b>Name</b>		
<b>Student I.D.</b>		
<b>Section</b>	[1] UTH 09:00 – 09:50 [2] UTH 10:00 – 10:50 ✓[3] UTH 12:00 – 12:50	<i>Please tick one</i>

Question	Grade	
Question 1 (PART A)	8	6.5
Question 1 (PART B)	8	7
Question 2	14	9
Question 3	12	7.5
Question 4	8	6.5
<b>TOTAL</b>	<b>50</b>	<b>36.5</b>

**Notes:**


1. Your answers must be written on the question paper and in the place allocated. Any answer written on any other place will not be marked.
2. Use the back of the pages for any rough work, BUT remember rough work will not be marked.
3. Do not give more than one answer (alternative solutions) to the same question; if you do so then only the first answer will be marked.
4. **Switch off your mobile** and keep it in your pocket or bag.

### Question 1


#### PART A [ 3 + 3 + 2 = 8 marks ]

1. Define the following terms:


Data elements that have not meaningful 

Parametric end User: Type of end users of database who use the database always to do what? 

2. Give an example of a system in which it may make sense to use traditional file processing instead of the database approach. Explain why?

quiz 1 marks only  
because its simple and doesn't change always  
Also, doesn't need to share it with multi-users  
and its personal 

3. List two (2) responsibilities of the DBA?

1. security and Passwords (authority)
2. control DB 

### Question 1

#### PART B [ 5 + 3 = 8 marks ]

1. What is the difference between the database schema and database state (Show an example to support your answer)? Which one is changed more frequently?

data Schema describe aspect data

data State is the database data at a moment time  
↓  
Particular

data Schema	car ID	model	Price
	1	A	20 000
	2	B	30 000

Example - 1

data state : initial state , valid state

↓  
before define

↓  
after define  
data and data  
type

data state change more frequently.

2. DBMS provides its users with many ways to interact with data. List three (3) of the ways that are considered to be user friendly interfaces.

parametrical user interface : eg. buttons and tick box

Graphical interface

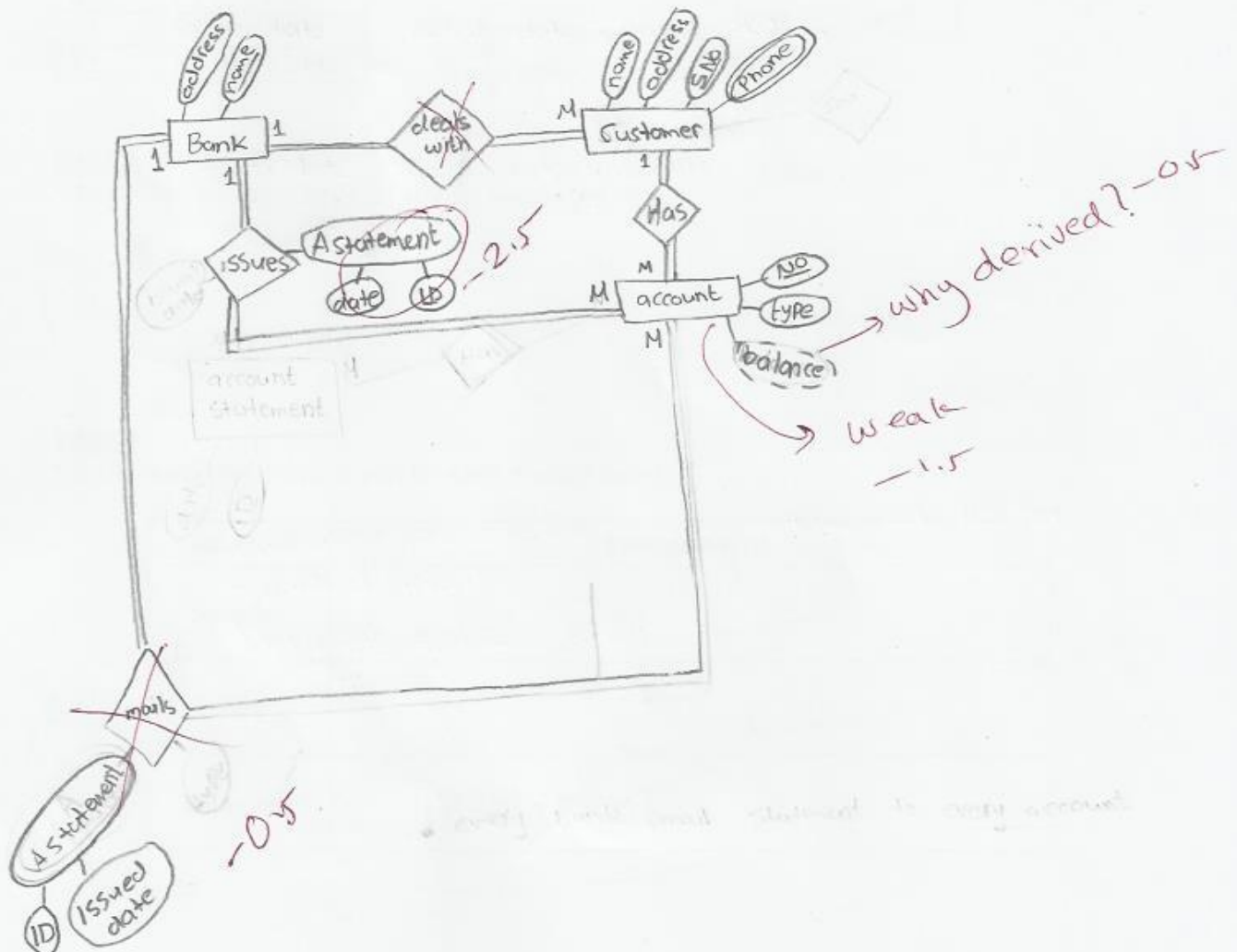
Form based interface : e-mail



## Question 2 [ 14 marks ]

Draw an ER diagram for a banking database according to the following scenario. Note any unspecified requirements, and make appropriate assumptions to make the specification complete.

Each bank has an address and a unique name and deals with many customers and offers many types of accounts. Each customer has a name, a permanent address, a social security number and may have multiple phone numbers, and the same phone number may be shared by multiple customers. A customer can own multiple accounts, but each account is owned by a single customer. Each account has an account number (unique within the bank), a type (such as saving, checking, etc.), and a balance. The bank issues an account statement for each account and mails it to its account owner every month. As time goes on, there will be multiple statements of the same account. Each statement has an issued date and a statement ID. All the statements of the same account have different statement IDs, but two different accounts could have statements with the same statement ID. Note that some customers prefer to have an electronic statement rather than hard copy sent by email.



**Question 3 [ 2 + 2 + 8 = 12 marks ]**

Consider the Suppliers-and-Parts database given below.

**Supplier**

SNUM	SNAME	LOCATION
S1	Smith	London, UK
S2	Jones	Paris, France
S3	Blake	Paris, France

**Part**

PNUM	PNAME	COLOR	WEIGHT	LOCATION
P1	Nut	Red	12	London, UK
P2	Bolt	Green	17	Paris, France
P3	Screw	Blue	17	London, UK
P4	Screw	Red	14	Paris, France

**Shipment**

SNUM	PNUM	QTY
S1	P1	300
S1	P2	200
S1	P3	400
S1	P4	NULL
S2	P1	300
S2	P2	400
S3	P2	200

Attribute	Format
SNUM, LOCATION, PNUM, COLOR	Characters: max size 25
QTY, WEIGHHT	Integer
SNAME	Characters: max size 25 [Unique]

**PART A**

Specify the candidate key(s) (if any) of *Supplier* relation.

① SNUM

1 Sname

**PART B**

Specify the foreign keys (if any) for each relation above.

Relation	Foreign Key(s)
Supplier	- ✓
Part	- ✓
Shipment	(SNUM, PNUM)

1.5

### Question 3

#### PART C

Suppose that each of the following operations is applied directly to the Suppliers-and-Parts database. For each operation, indicate whether this operation will be successful (i.e. will lead to a valid relation state or not), if not, specify the reason(s).

a. *insert into Supplier values ('S4', 'Smith', 'Manama, Bahrain');*

Successful operation: (YES/ NO)

If NO, WHY



a. *Delete all Shipment tuples with PNUM='P1';*

Successful operation: (YES/ NO)

If NO, WHY

2



b. *insert into Shipment values ('S1', 'P4', '300 pc');*

Successful operation: (YES/ NO)

If NO, WHY

'300 pc' evaluate domain

'S1, P4' evaluate key (repeated)

3

